GRADUATE SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF PITTSBURGH ▪ PITTSBURGH, PENNSYLVANIA 15213

RADIATION HEALTH

November 5, 1969

Professor Joshua Lederberg
Department of Genetics
Stanford University School of Medicine
Stanford Medical Center
300 Pasteur Drive
Palo Alto, California 94304

Dear Dr. Lederberg:

Enclosed are reprints of some of my papers on the chemistry and biological effects of peroxide derivatives which you requested on September 29. I have several other papers which will appear or are in preparation. Several of these are in forthcoming issues of the Journal of the American Chemical Society and deal with the catalytic decomposition of H_2O_2 by metal chelates in the neutral pH region. I am preparing a manuscript on H_2O_2 adducts, which is briefly mentioned in the enclosed reprint on histidine peroxide. I think the paper on the H_2O_2 adducts, which are formed in dilute aqueous solution in which as little as 10^{-4}M of H_2O_2 reacts, is of special interest with regard to the mechanism of the mutagenicity produced by organic peroxides. What appears to happen is that the peroxidic oxygens compete for hydrogen bonding in the base pairs. Once the peroxide-thymine adduct, for example, is formed, it breaks down destroying the base as well as the peroxide.

I have summarized a great deal of the work on mutagenicity and cytotoxicity of irradiated compounds in a comprehensive review which is in press in the Bulletin of the World Health Organization. A preprint is enclosed for your information.

Sincerely yours,

Jack Schubert, Ph.D.
Professor of Radiation Chemistry

JS:dm

Enclosures:
(1) Int. J. Radiat. Biol., 1967, 13:297-300.
(2) Int. J. Radiat. Biol., 1967, 13:485-489.
(3) Int. J. Radiat. Biol., 1968, 14:577-583.
(4) Jour. Am. Chem. Soc., 1968, 90, 4476.
(5) Rad. Res., 1969, 37:531-538.
(6) J. Gen. Microbiol., 1969, 57:25-34.
(7) Bull. World Hlth. Org., in press.